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Notes on the Behavior of Some Madagascar Chameleons (*Reptilia, Chamaeleontidae*)

Hymen Marx*

During the spring of 1953 the Chicago Natural History Museum received living reptiles collected in Madagascar by Karl Ludwig Koch, among them a fine female chameleon, *Chamaeleo oshaugnessyi* Gunther. This animal lived in the laboratory approximately ten months and is preserved in the Chicago Natural History Museum (CNHM 73235). At the time of death the animal's body length was 105 mm. and the tail length 142 mm.

Upon arrival this chameleon was housed alone in a cage 430 mm. wide, 280 mm. deep, and 240 mm. high (inner dimensions). Branches and twigs were placed in the cage. The temperature in the laboratory varied throughout the year from 68° to 76° F. A 25-watt tungsten bulb was in the cage and used when the temperature reached its lower limits. This individual thrived, at least for the first eight months, in her new environment.

In the laboratory the diet of this animal consisted of mealworms, grasshoppers, crickets, flies, and earthworms. On occasion, when living material became scarce, beef or beef liver was placed on a mealworm's dorsum and, upon movement of the mealworm, this combination was eaten. The animal was usually fed every other day depending upon supply and demand, with emphasis upon demand. As many as five 3- to 4-inch earthworms were devoured in one feeding.

Usually when earthworms were to be fed, they were removed from a jar filled with earth, washed with cool water, dried in a cotton towel, and placed in a transparent dish on the floor of the cage. They were eaten in typical chameleon fashion. On one occasion I had not noticed that the feeding dish contained a small amount of water. When I placed an earthworm in the dish the chameleon turned, aimed, and fired in true chameleon style. The tongue shot out to well in excess of the body

*Chicago Natural History Museum, Chicago 5, Illinois.

length. It did not adhere to the earthworm because of the earthworm's wet surface. Less than a minute passed and the chameleon made another attempt with the same negative result. Moving closer at each try, the lizard made at least ten attempts at the earthworm, always with the same negative results. In all attempts contacts of the tongue with the earthworm were definitely made, but adhesion was never effected. The worm was continually in motion in the dish. Finally, when the chameleon was less than an inch from its food, it did not use its magnificently specialized feeding organ. Instead it turned its head, side down, opened its mouth, and lifted the earthworm out of the dish, using the side of its mouth, and devoured it.

Later in the afternoon, the same procedure was repeated with the same results. The following day a wet earthworm was offered, and again the chameleon behaved in the same way. The lizard never went close to the food, but always attempted to feed with its tongue until it was within one inch of the earthworm ; only then did it use its jaws.

Two *Chamaeleo verrucosus* Gray were also kept alive. The larger of the two animals (CNHM 72782 ; body length 235 mm., tail length 270 mm.) lived one year in the laboratory.

Upon arrival these two males were housed in a cage 880 mm. wide, 500 mm. deep, and 420 mm. high (inner dimensions) with branches placed in the cage. They soon had to be separated. When kept together they were aggressive toward each other and to anyone reaching into the cage. On one occasion the more aggressive one made a sudden lunge forward and snapped at my hand. When these animals were separated they became extremely docile, were easily handled, and roamed freely in the laboratory, making fine pets.

Although mealworms, earthworms, grasshoppers, and the like were regularly fed, the bulk of their food consisted of one-half to three-fourths-grown white mice, which were taken without hesitation. It was astonishing to see so large an object flying through the air attached to a tongue longer than the lizard's body. The mouse was then seized by the chameleon's jaws and crushed. The chameleon would not attempt to swallow until the mouse was dead. The mouse was not cut into pieces but swallowed entire, head first.

A third male *Chamaeleo verrucosus* Gray (CNHM 95996 ; preserved body length 143 mm., tail length 148 mm.) was kept alive for over one year. During the latter part of its life it was put into the larger of the above mentioned cages. The animal ate less and less and soon stopped eating. Over a period of time, the distance to which the lizard could extend its tongue decreased until the tongue could not be extended more than an inch. This chameleon was returned to the

smaller cage and within a week fed almost normally, increasing the amount of food taken and extending the tongue farther and farther, but it never fully recovered the original capacities of the tongue. It lived an additional three months and apparently did much better in a smaller cage.

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